



Facts About Lead

Natural background levels for lead in Washington

Lead is a naturally occurring substance. It is a dense, bluish grey, soft and malleable metal. It is about the 36th most common chemical element on earth.

The Washington State Department of Ecology and the United States Geological Survey have determined that the natural background level of lead in Puget Sound soil is 24 ppm (parts per million). The state average is 17 ppm.

Human uses for lead

Humans have used lead for thousands of years; it was one of the first known metals. Over 2000 years ago, Romans soldered water pipes with an alloy of lead and tin. In the modern era we use lead in batteries, ammunition, solder and pipes, and roofing. Lead is used as a protection from radioactive material and X-rays.

Another common use for lead was as a component added to gasoline to prevent knocking. Lead from automobile exhaust settled into soils alongside roads and freeways, contaminating the land. Tetraethyl lead was recognized as a significant contributor to health problems, and was banned from gasoline in 1978. All gasoline-powered automobiles manufactured in the United States are now required to operate on unleaded gasoline. Worldwide, countries that now require the use of unleaded gasoline report a drop in blood lead levels. (Blood lead is a term used to describe the amount of lead in the blood -- measured in micrograms per deciliter of blood).

Until the 1970s lead was regularly used in paints, pigments and glazes. The use of "lead paint" has been largely discontinued, however, because of the dangers of lead poisoning. Older homes continue to be a significant source of lead exposure, because leaded paint deteriorates and flakes off. Unless the paint was permanently removed, you should suspect leaded paint in your home if it was built before 1978.

If lead enters the ground whether as industrial byproduct, flaking paint or by any other method, the lead will remain in the soil indefinitely.

Children, especially toddlers, get the specks of paint and paint dust on to their hands and into their mouths. Children put toys or pacifiers in their mouths that might be coated with lead dust. Children also get dirt contaminated with lead into their mouths. Ingesting (eating) lead paint is a serious health risk and can result in both short and long-term health problems.

How lead is regulated in Washington State

Washington law requires that lead-contaminated soils be cleaned up to specific levels. Ecology regulates soil contamination under the Model Toxics Control Act (MCTA). Lead clean-up levels, which are measured in ppm (parts-per-million), vary according to the intended use of the property. The strictest clean-up standard is known as "Method A." The Method A clean up level for lead is (in parts-per-million):

Residential: 250 ppm

Industrial: 1000 ppm

Lead and your health

- Lead is toxic to human beings and children are particularly sensitive to the effects of lead in their bodies. Lead poisoning is difficult to detect because there are no unique signs or symptoms. Therefore, if you believe you have the potential to be exposed to lead it is important to take steps to reduce your exposure to this toxic substance. For more information, see ***Guidelines for reducing your exposure to contaminated soils*** below.
- Acute (short-term) exposure to high levels of lead can result in brain and kidney damage.
- Chronic (long-term) exposure may affect the blood and central nervous systems, blood pressure, kidneys and the body's ability to metabolize vitamin D. Lead exposure may damage the reproductive system, resulting in reduced sperm counts and increased miscarriage.
- Children are particularly vulnerable to the effects of chronic lead poisoning. Effects range from lowered IQ and reduced growth to balance, memory, and hearing problems. Pregnant women exposed to lead may have babies born prematurely and at lowered birth weights. Newborns may have the neurological effects described above.
- Since children are especially sensitive to lead, doctors frequently prescribe blood tests to screen them for possible long-term lead exposure. If you suspect you or

your family has been exposed to excessive amounts of lead discuss it with your doctor or pediatrician. A blood test will measure your child's blood lead level.

Gardening around lead: Best practices

The goal of the following suggestions is to reduce the amount of lead-contaminated soil or dust that you unintentionally swallow or breathe in while gardening or working around your home. Ingesting (eating) and inhaling (breathing in) are the primary ways that lead enters your body. Follow these practices to reduce your exposure:

- Establish gardens as far away from driveways and roads as possible. (Before 1995 some gasoline in Washington state contained lead, which may have settled on the side of roadways).
- Keep gardens away from old painted structures. Buildings constructed before 1978 likely were painted with leaded paint. Paint chips and dust from scraping and deterioration may have fallen onto soils near the building. Sandblasting spreads lead dust out from farther from the house.
- Control peeling house paint. Cover areas near the house with grass or other material.
- Wear gloves while gardening.
- Wash all vegetables carefully and peel vegetables where possible. Be sure to remove particles of soil on the food item. Wash inside crevices (of broccoli, for example).
- Though there is evidence that vegetables and fruits may take up small amounts of lead into their roots or leaves, a more serious problem could come from eating fruits and vegetables that have bits of contaminated soils stuck to them.
- Add clean soils or soil supplements such as compost or mulch to your existing garden. Clean soils are ones that are known to be contaminant-free. If you are unclear whether your new soils are clean you may consider testing. For more information on composting and mulch visit the King County Soils and Composting page:
<http://dnr.metrokc.gov/swd/resrecy/composting/composting.shtml>
- Consider establishing a raised bed using clean soils.
- Do not garden in soils with lead in excess of 250 ppm. Bring in clean soils and build a raised bed instead.
- Wet down soils with water before you garden to limit the amount of dust you inhale.
- For more information, see ***Guidelines for reducing your exposure to contaminated soils*** below.

Washington State University has conducted research on the gardening in arsenic and lead contaminated soils. For more information consult their report on lead, arsenic and gardening: <http://cru.cahe.wsu.edu/CEPublications/eb1884/eb1884.pdf>

Guidelines for reducing your exposure to contaminated soil

Lead does not decompose or biodegrade and will remain permanently in the soil unless it is removed. Therefore, if you suspect your soils are contaminated you should take the following exposure reduction measures:

- Keep children from playing in contaminated dirt. The most likely way to become exposed to arsenic is from ingesting (eating) dirt; toddlers and young children tend to play in dirt and then put their hands/toys/other items in their mouths. Some children (over 2 years old) and adults eat dirt on purpose. To read more about dirt eating [click here](#).
- Frequently wash toys, pacifiers and other items that go into children's mouths.
- Cover bare soils with grass or other material.
- Wash hands and face thoroughly after working or playing in the soil, especially before eating. Do not eat, chew, or smoke in areas with contaminated soil.
- Wash garden vegetables and fruits carefully to remove all soil particles. Take care to get dirt out of the crevices of vegetables such as broccoli.
- Remove work and play shoes before entering the house.
- Wash soil-laden clothes separately from other clothes.
- Damp-mop floors and wipe down counters, tables and window ledges regularly. Do not use a vacuum as a method to keep contaminated dust under control. Vacuum cleaners DO NOT reduce dust and tend to stir it up into your breathing zone. If you prefer to use a vacuum cleaner, use one with a HEPA (high efficiency particulate air) filter.
- Prevent pets from tracking contaminated soils into your home. Keep them out of areas with exposed dirt.
- Consider wearing a mask if you spend time in dusty environments.
- Make sure you and your children eat a balanced diet with adequate amounts of iron and calcium. Iron and calcium help to prevent lead from becoming a problem in the body.